

Jim Bugel • Executive Director, Regulatory Affairs • phone 202.419.3004 • fax 202.419.3030

November 13, 2001

RECEIVED

NOV 15 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, S.W.
12th Street Lobby, TW-A325
Washington, DC 20554

Re: Ex Parte Presentation
ET Docket No. 98-153

Dear Ms. Salas:

On November 9, 2001, the undersigned along with Brian Fontes and David Shively of Cingular Wireless LLC met with Commissioner Kevin Martin and Monica Shah Desai to discuss regulatory issues and interference potential relating to ultra wideband (UWB) technology.

We emphasized that while UWB technology holds promise, the FCC must be deliberate in setting forth rules for this technology. The positions taken and issues discussed have been previously put forward in writing for the record in the above-mentioned proceeding. The enclosed materials served as basis for these discussions.

Pursuant to Sections 1.1206 of the Commission's Rules, an original and one copy of this letter and the attachment are being filed with your office. If you have any questions concerning this submission, please contact the undersigned.

Sincerely,



Jim Bugel
Executive Director

Attachment

cc: Commissioner Kevin Martin
Monica Shah Desai

011

- Various UWB devices have signal characteristics that are very different from one another, not all of which have been studied or identified. The characteristics of all types of UWB devices must be considered and rules adopted accordingly. Similarly, if UWB devices used for wireless networking applications will be interoperable, a standard waveform and modulation must be defined and adopted by the industry.
- The additive nature of multiple types of transient waveforms needs to be examined in much greater detail, including additional measurements as well as detailed numerical simulations. Fundamentally, the signals emitted from multiple transmitters will have an additive effect, thus raising the noise floor in affected receivers. Regarding the additive nature of two, or more, noise sources located near a communications receiver: due to the random nature of the noise signals, the signals will add in a non-coherent manner (i.e. the total noise power will be the sum of the noise power from each individual noise source). For example, when two noise sources of equal value are present the total noise power is 2 times greater than either individual noise source. This effect is shown in Figure E.6 of Appendix E of the NTIA Report 01-383, The Temporal and Spectral Characteristics of Ultrawideband Signals, which is available on the NTIA website at: <http://www.its.bldrdoc.gov/pub/ntia-rpt/01-383/>

Recommendations

- Limit UWB devices to spectrum above 6 GHz for most systems and below 1 GHz for ground penetrating radar systems, or other remote sensing applications.
- The operation of UWB devices should be licensed, or at least coordinated, so that any interference issues can be examined as additional UWB systems are deployed. Conventional licensees and other users of UWB technology need to be able to determine who is using UWB devices and where they are located. This will help UWB systems to avoid causing interference and will enable others to be able to track any interference that occurs.
- Identify specific categories of UWB devices and establish proposed rules for licensing these categories based on individual waveforms, power levels, and deployment scenarios. These proposed rules should be sent out for public comment.
- The OET should consider developing a standard, detailed, measurement procedure to be used for testing UWB systems. This should help to ensure that all UWB devices are evaluated in a consistent manner.
- Identify areas where further testing is needed, including the additive effects of multiple UWB devices and multiple types of UWB devices.



ULTRA-WIDEBAND (UWB)

ET Docket 98-153

The Record Shows the Need for Caution regarding UWB

- Cingular agrees that UWB technology holds promise; however, the Commission must not put at risk existing radio services which all Americans depend on for communications related to safety, personal convenience, and business, merely because of the potential benefits of a new and untried technology.
- The majority of studies to date have shown that there is an interference concern with UWB and that the effects of multiple UWB devices are additive. NTIA reported that "operations of UWB devices below 3.1 GHz will be quite challenging" (NTIA Special Publication 01-43). At least one of the UWB proponents has also agreed with this viewpoint.
- The promises of greater spectral efficiency have not yet been demonstrated. Is there a reason to promote UWB technologies for widespread deployment if there is not a clear gain over existing Part 15 technologies, such as Bluetooth, IEEE 802.11a/b, etc?

Cingular's Concerns

- Cingular is concerned about the impact of UWB devices:
 - UWB devices would potentially interfere with base station and handset receivers used in cellular/PCS systems having a negative impact on receiver performance. Effects could include cell shrinkage, coverage holes, degraded voice quality, and decreased throughput of wireless data. Even UWB devices that are limited to indoor use could potentially interfere with cellular/PCS/GPS receivers used indoors.
 - UWB will impact GPS for both location and network synchronization. Assisted-GPS systems would be even more susceptible to interference. Additional analysis is clearly warranted to protect these vital systems.
 - UWB could interfere with other radio systems including public safety communications systems, entertainment systems, mobile satellite services, military systems, etc.
 - UWB could also interfere with non-RF based systems including hearing aids, pacemakers, implanted defibrillators, and other hospital equipment. This is clearly a concern for UWB devices used indoors.